

REMARKS

This Amendment responds to the Office Action dated December 27, 2001 in which the Examiner objected to the drawings and disclosure, rejected claims 1, 3 and 7-9 under 35 U.S.C. §102(b) and rejected claims 2, 4-6 and 10-19 under 35 U.S.C. §103.

As indicated above, the incorrect reference numerals listed on page 2 line 3 and page 16 line 13 have been corrected in the specification as indicated above. Therefore, it is respectfully requested that the Examiner withdraws the objection to the drawings.

As indicated above, minor informalities in the specification have been corrected on page 2 of the specification. It is respectfully requested that the Examiner approves the correction and withdraws the objection to the disclosure.

Claim 1 claims an electronic apparatus comprising an electronic circuit board, an electrically conductive casing, a semiconductor element module and a resin fixture. The electrically conductive casing is for encasing the electronic circuit board. The semiconductor element module electrically is connected to the electronic circuit board via a plurality of lead terminals. The semiconductor element module has a column-shaped section. An axis of the column-shaped section is parallel to a direction of extension of the lead terminals. The resin fixture intervenes between the electrically conductive casing and the semiconductor element module. The resin fixture is mounted with the semiconductor element module and is fitted to the electrically conductive casing. The resin fixture has a cylinder-shaped section for retaining, in its inner periphery, the column-shaped section of the semiconductor element module. An outer periphery surface of the cylinder-shaped section is plated and an inner periphery surface of the cylinder-shaped section is not plated.

Through the structure of the claimed invention a) having a resin fixture having a cylinder-shaped section for retaining a column-shaped section of a semiconductor element module and b) having an outer peripheral surface of the cylinder-shaped section being plated and an inner peripheral surface of the cylinder-shaped not being plated, as claimed in claim 1, the claimed invention provides an electronic apparatus which allows the semiconductor element module to be reliably fitted to the resin fixture and ensures electrical insulation between the semiconductor element module and the casing. The prior art does not show, teach or suggest the invention as claimed in claim 1.

Claim 20 claims an electronic apparatus comprising an electronic circuit board, an electrically conductive casing, an optical semiconductor element module and a resin fixture. The electrically conductive casing is for encasing the electronic circuit board. The optical semiconductor element module is electrically connected to the electronic circuit board. The resin fixture intervenes between the electrically conductive casing and the optical semiconductor element module. The resin fixture is mounted with the optical semiconductor element module and is fitted to the electrically conductive casing. The resin fixture has a base and two arms. The base oppose a surface of the electrically conductive casing onto which an opening is provided for the electrical connection of the optical semiconductor element module. The two arms extend from the base along side surfaces of the electrically conductive casing and forming approximate U-shape along with the base. A plurality of notched portions are formed on the external surface of the base of the resin fixture. A plurality of hooked portions are formed on the side surfaces of the electrically conductive casing in positions which fit the notched portions. A protrusion is formed on

the external surface and near the tip of each of the arms of the resin fixture. An aperture is formed on each of the side surfaces of the conductive casing at a position corresponding to the protrusion.

Through the structure of the claimed invention having a plurality of notched portions, a plurality of hooked portions, a protrusion and an aperture, as claimed in claim 20, the claimed invention provides an electronic apparatus in which both the resin fixture and the electrically conductive casing will deform upon engagement of the protrusions and apertures so that assembly is simplified. The prior art does not show, teach or suggest the invention as claimed in claim 20.

Claim 1 was rejected under 35 U.S.C. §102(b) as being anticipated by *Abe et al.* (U.S. Patent No. 5,875,047).

Abe et al. appears to disclose an optical receiver module 53 and an optical transmitter module 54 which are housed in a main body 52 of the optical unit 51. Optical fibers 55, 56 are connected respectively at first ends thereof to the modules and at second ends thereof to optical connectors 57, 58. (col. 4, line 66 through col. 5, line 3) The casing body 61 is molded as a one-piece construction, out of a synthetic resin having excellent moldability and strength, such as an ABS resin. The casing body 61 is shaped like a container having a base 64 surrounded by a wall 62. To mount a printed circuit board, steps 63 of a predetermined height above the base 64 are provided at four corners of the wall 62. Claws for latching the printed circuit board in position extend from the right and left walls 62. (col. 5, lines 8-15) Module receptacles 71, 72 for holding an optical receiver module and an optical transmitter module, respectively extend in parallel from the

front wall 62. Grooves 73 for receiving casing-lid claws are provided on the wall 62 of both sides of the module receptacles 71, 72. (col. 5, lines 22-26) The so-constructed casing body 61 is metallized on the whole surface through a process, for example, of electroless plating, copper plating and nickel-plating for glossy finishing. FIG. 7 shows the casing body 61 with the printed circuit board 81, optical receiver module 53 and optical transmitter module 54 mounted thereon. (col. 5, lines 32-38) The optical receiver module 53 is placed in the casing-body module receptacle 71 and clamped therein with a metal clamp 86. The optical transmitter module 54 is placed in the module receptacle 72 and clamped therein with a metal clamp 86. The optical receiver module 53 houses a sealed metal container incorporating a photo diode circuit for performing opto-electric conversion and a preamplifier IC for amplifying the converted electric signal, and is connected to an optical fiber 55. (col. 5, lines 59-67)

Thus, *Abe et al.* merely discloses that the module receptacle 71, 72 are part of the molded casing body 61 which is metalized on the whole surface. (col. 5, lines 32-33) Thus, nothing in *Abe et al.* shows, teaches or suggests the resin fixture having a cylinder-shaped section in which an outer periphery surface is plated and an inner periphery surface is not plated as claimed in claim 1. Rather, *Abe et al.* clearly teaches away from the claimed invention since the module receptacle 71, 72, which are part of the molded casing body 61 are metalized on the whole surface.

Additionally, since *Abe et al.* clearly teaches that the module receptacle 71, 72 are part of the molded casing body 61, nothing in *Abe et al.* shows, teaches or suggests a) a resin fixture having a plurality of notched portions formed on the external surface of the

base, a protrusion formed near the tip of each of the arms of the resin fixture, and b) an electrically conductive casing having a plurality of hooked portions and an aperture as claimed in claim 20. Rather, *Abe et al.* clearly teaches away from the claimed invention since the module receptacle 71, 72 are part of the molded one-piece construction of the casing body 61.

Since nothing in *Abe et al.* shows, teaches or suggests a resin fixture as claimed in claim 1 or new claim 20, it is respectfully requested that the Examiner withdraws the rejection to claim 1 under 35 U.S.C. §102(b) and allows new claim 20.

Claims 1, 3 and 7-9 were rejected under 35 U.S.C. §102(b) as being anticipated by *Teruhiro* (Japanese reference 09-270747).

Attached to this Amendment is an Information Disclosure Statement which provides the Examiner with a copy of the Japanese Reference 09-270747 as well as a brief translation. Applicants respectfully point out that the inventor Kondo Teruhiro as disclosed in the patent abstract from the European Patent Office is incorrect and is actually the present invention Akihiro Kondo.

The Japanese reference appears to disclose in Figure 1 a casing 14, a block 16, an opening 18 formed in the casing and an opening 19 formed on each of two opposite side surfaces of the block 16. The opening 18 and the opening 19 engage with each other. As shown in Figure 6, the assemblies are mounted into the casing 14 in such a manner that the convex portion or opening 19 formed on the side surface of the block 16 fits into the opening or convex portion 18 formed on the side surface of the casing 14. Openings 20a, 20b in the block are formed such that the lead terminals 14a and 14b are individually

inserted therein. The lead terminal 40a is soldered to the opening 22a of the flexible substrate and lead terminal 4b is soldered to the opening 22b of flexible substrate.

Thus, the Japanese reference merely discloses openings 20a and 20b formed in the block 16. Nothing in the Japanese reference shows, teaches or suggests a resin fixture in which an inner peripheral surface of a column-shaped section is not plated and an outer periphery surface is plated as claimed in claim 1. Rather, the Japanese reference merely discloses openings 20a, 20b formed in the block 16 through which lead terminals 4a and 4b are individually inserted.

Additionally, the Japanese reference merely discloses openings 18 and 19 formed on the casing and block. Nothing in the Japanese reference shows, teaches or suggests a resin fixture formed with a plurality of notched portions and a protrusion and an electrically conductive casing formed with a plurality of hooked portions and an aperture as claimed in new claim 20.

Since nothing in *Teruhiro* shows, teaches or suggests a resin fixture as claimed in claim 1 or new claim 20, it is respectfully requested that the Examiner withdraws the rejection to claim 1 under 35 U.S.C. §102(b) and allows new claim 20.

Claim 8 depends from claim 1 and recite additional features. It is respectfully submitted that claim 8 would not have been anticipated by *Teruhiro* within the meaning of 35 U.S.C. §102(b) at least for the reasons as set forth above. Therefore, it is respectfully requested that the Examiner withdraws the rejection to claim 8 under 35 U.S.C. §102(b).

Claims 2 and 16 were rejected under 35 U.S.C. §103 as being unpatentable over *Teruhiro* in view of *Riichi et al.* (Japanese Reference 08-97447). In addition, claims 4-6,

10-15 and 17-19 were rejected under 35 U.S.C. §103 as being unpatentable over *Teruhiro* in view of *Riichi et al* and further in view of *Suzuki et al.* (U.S. Patent No. 5,073,047).

As discussed above, since nothing in *Teruhiro* shows, teaches or suggests a resin fixture as claimed in claim 1, it is respectfully submitted that the combination of *Teruhiro* with *Riichi et al.* or *Suzuki et al.* will not overcome the deficiencies of *Teruhiro*.

Therefore, it is respectfully requested that the Examiner withdraws the rejection to claims 4-6, 10-15 and 17-19 under 35 U.S.C. §103.

The prior art of record, which are not relied upon, are acknowledged. The references taken singularly or in combination do not anticipate or make obvious the claimed invention.

Thus it now appears that the application is in condition for reconsideration and allowance. Reconsideration and allowance at an early date are respectfully requested.

If for any reason Examiner feels that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed within the currently set shortened statutory period, applicant respectfully petitions for an appropriate extension of time. The fees for such extension of time may be charged to our Deposit Account No. 02-4800.

In the event that any additional fees are due with this paper, please charge our
Deposit Account No. 02-4800.

Respectfully submitted,

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Marked-up Copy of the Specification

Page 1, Paragraph Beginning at Line 15

Fig. 9A is an exploded view showing an example configuration of a typical optical transmitter/receiver 900; Fig. 9B is a side elevational view of the optical transmitter/receiver 900 1 illustrated in Fig. 9A; Fig. 9C shows partly in section the major part of the optical transmitter/receiver 900 illustrated in Fig. 9A; and Fig. 9D is a front elevational view of the optical transmitter/receiver 900 illustrated in Fig. 9A. The optical transmitter/receiver 900 comprises a coaxial optical semiconductor element module 6; an electronic circuit board 7 electrically connected to the optical semiconductor element module 6 and having pads 8a and 8b on its surface; an electrically conductive casing 9 in the form of, e.g., a sheet metal box, which accommodates and electromagnetically [shield] shields the electronic circuit board 7; and a metal flange 10 interposed between the optical semiconductor element module 6 and the electrically conductive casing 9, [the] a metal flange [12] 10 being fitted with the optical semiconductor module 6 and fixedly secured to the electrically conductive casing 9 by means of screws 11a and 11b. The optical semiconductor element module 6 includes a stem 1 incorporating an optical semiconductor element; lead terminals 2a and 2b extending from the stem 1 for electrical connection with the optical semiconductor element; a can 3 partially covering the stem 1; a trunk 4 extending from the can 3; and a fiber 5 disposed on the trunk 4.

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Page 2, Paragraph Beginning at Line 11

A conventional optical transmitter/receiver can be configured in the manner of the optical transmitter/receiver 900 described in the following. The electronic circuit board 7 is securely retained, for example by an adhesive, in the electrically conductive casing 9, by an adhesive, for example.] The optical semiconductor element module 6 and the metal flange 10 are fixedly retained, for example by YAG welding, for example.] The electrically conductive casing 9 and the metal flange 10 are fastened together by screws or the like. The lead terminals 2a and 2b are connected to the pads Ba and 8b, respectively, for transmission/reception and conversion of optical /electric signals.

Page 16, Paragraph Beginning at Line 8

The optical transmitter/receiver 200 is configured in this manner. With the slits 16a, 16b and the protrusions 18a, 18b provided in and on the sidewalls of the resin flange 12 of the first embodiment, the resin flange 12 is fitted slidably on the electrically conductive casing 9 from above such that the slits 16 and 16b can mate with front faces [15] 15a and 15b, respectively, of the electrically conductive casing 9. At this point, the protrusions 18a and 18b initially spread the right and left sidewalls of the electrically conductive casing 9 outward within the range of elastic deformation thereof. When the protrusions 18a and 18b snap into the apertures 17a and 17b formed in the right and left sidewalls, the elastic deformation of the right and left walls of the electrically conductive casing 9 is removed so that the resin flange can fixedly be clamped by the electrically

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conductive casing 9. As a result, it is possible to remove the screwing or adhesion step required for firmly fastening the electrically conductive casing 9 and the resin flange 12.

Marked-up Claims 1 and 17-19

1. (Amended) An electronic apparatus comprising:
an electronic circuit board;
an electrically conductive casing for encasing said electronic circuit board;
a semiconductor element module electrically connected to said electronic circuit board via a plurality of lead terminals, said semiconductor element module having a column-shaped section, an axis of said column-shaped section being parallel to a direction of extension of said lead terminals; and
a resin fixture intervening between said electrically conductive casing and said semiconductor element module, said resin fixture mounted with said semiconductor element module and fitted to said electrically conductive casing, said resin fixture having a cylinder-shaped section for retaining, in its inner periphery, said column-shaped section of said semiconductor element module, an outer periphery surface of said cylinder-shaped section being plated and an inner periphery surface of said cylinder-shaped section not being plated. disclosed in page 5, line 12 - 16.

17. (Amended) An electronic apparatus according to claim [1] 20, wherein
said semiconductor element module has a raised portion formed on its outer surface at a site where said semiconductor element module is fitted to said resin fixture, and
wherein

said resin fixture has [a notched portion formed in its outer wall and a protrusion formed on its outer surface and has] a recessed portion formed in the inner surface at a site

Marked-up Claims 1 and 17-19

where said semiconductor module is mounted, said recessed portion being fitted to said raised portion[, and wherein

said electrically conductive casing has a hooked portion which fits said notched portion of said resin fixture and an insertion hole which receives said protrusion of said resin fixture].

18. (Amended) An electronic apparatus according to claim [1] 20, wherein said semiconductor element module has an externally threaded portion formed on its outer surface at a site where said semiconductor element module is fitted to said resin fixture, and wherein

said resin fixture has [a notched portion formed in its outer wall and a protrusion formed on its outer surface and has] an internally threaded portion formed in the inner surface at a site where said semiconductor module is mounted, said externally threaded portion being screwed into said internally threaded portion[, and wherein

said electrically conductive casing has a hooked portion which fits said notched portion of said resin fixture and an insertion hole which receives said protrusion of said resin fixture].

19. (Amended) An electronic apparatus according to claim [1] 20, wherein

Marked-up Claims 1 and 17-19

said semiconductor element module has a recessed portion formed in its outer surface at a site where said semiconductor element module is fitted to said resin fixture, and wherein

said resin fixture [has a notched portion formed in its outer wall and a protrusion formed on its outer surface and] has a raised portion formed on its inner surface at a site where said semiconductor module is mounted, said raised portion being fitted to said recessed portion[, and wherein

said electrically conductive casing has a hooked portion which fits said notched portion of said resin fixture and with an insertion hole which receives said protrusion of said resin fixture].